Space Weather Forecast

Issued on Saturday, 31 August 2024 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: G1 Minor Storms easing early day 1 (31 Aug). Moderate-class flares likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate with the strongest flare from the largest of the nine sunspots on the disc, located in the southeast. This has seen some slow growth along with the emergence of small spots around its periphery. The only other region of note is in the south-centre disc, which has rapidly developed in the last 36 hours, but is maturing into a simple bipolar group. The other region remain simpler, with the majority small and decaying unipolar groups.

No Earth directed coronal mass ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: The ongoing CME influence from 27 Aug quickly transitioned into an enhancement from the weak fast wind from a coronal hole around 30/0740 UTC. Solar wind speeds remained weak, however, peaking just below 400km/s. However the Interplanetary Magnetic Field, Bt, which was initially Strong, weakened a little at around 30/0730 UTC, before gradually easing to be Moderate by the end of the period. The north-south component, was initially Strongly positive (northward), but then sharply switched at 30/0730 UTC to become Moderately negative. This then largely persisted at Moderate negative values. Geomagnetic was initially Quiet to Unsettled (Kp1-3), but increased to be Active to G1 Minor Storm from 30/0900 UTC. BGS reported G1 intervals for 31/1800-2100 UTC and 31/2100-2400 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no Solar Radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely, with a slight chance of isolated Strong flares. The main flare risk is currently from the large sunspot region in the southeast.

Solar Wind /Geomagnetic Activity: There are no Earth-directed CMEs. Current weak high speed stream is expected to ease early on day 1 (31 Aug), with the next fast wind arrival anticipated on day 3 (02 Sep), although this is low confidence. Any enhancement from this feature is currently expected to be limited, with solar winds soon easing day 4 (03 Sep). Active to G1 Minor Storms remain possible early day 1, but soon easing to mainly Quiet with isolated Unsettled spells thereafter. There is a chance of and Unsettled to Active spell on day 3 from any onset of any fast wind.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to remain at background.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	30	1	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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